



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Takuya MONJU et al.

Application No.: 09/411,322

Filed: October 4, 1999

For: THERMAL TRANSFER RECORDING MEDIA

Group Art Unit: 1774

Examiner: B. Shewareged

Docket No.: 104472

REQUEST FOR RECONSIDERATION

Director of the U.S. Patent and Trademark Office
Washington, D.C. 20231

Sir:

In reply to the August 21, 2002 Office Action, reconsideration of the rejection is respectfully requested in light of the following remarks.

Claims 1-16 are pending; claims 1-12 are withdrawn from consideration; and claims 13-16 are rejected under 35 U.S.C. §103(a) over U.S. Patent No. 6,174,607 to Sugita et al. ("Sugita") in view of U.S. Patent No. 5,279,884 to Kitamura et al. ("Kitamura") and U.S. Patent No. 6,156,416 to Daems et al. ("Daems"). Applicants respectfully traverse this rejection.

Claim 13 recites a process for preparing a thermal transfer recording medium that includes "applying a composition for forming a solvent-resistant layer mainly containing a polyester resin and a polyethylene wax on a substrate in the form of a film and drying it to form a solvent-resistant layer." Sugita fails to teach or suggest such a process. Further, Kitamura and Daems fail to remedy the deficiencies of Sugita.

Sugita describes a thermal transfer recording medium including an ink layer containing an isocyanate curing agent and a vinyl chloride resin, and further including a

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release layer. As taught by Sugita, the release layer is made of polyethylene wax or polyester resin and also includes either an ethylene-vinyl acetate copolymer or a diisocyanate adduct (Example 1). The Office Action asserts that the Sugita release layer is equivalent to the claimed solvent-resistant layer. The Office Action further states that even though Sugita does not teach a release layer/solvent-resistant layer containing both a polyester resin and a polyethylene wax as claimed, it would have been obvious to combine the two. The Office Action takes the position that polyethylene wax and polyester resin perform the same function, provide the same effect, and would supplement each other in the release layer. Thus, the Office Action concludes that it would have been obvious to combine the separate ingredients as recited in claim 13. Applicants respectfully disagree with this assertion.

Sugita describes a thermal transfer recording medium wherein the ink layer is pre-cured on the release layer before transfer. The critical components of the Sugita medium are the combination of isocyanate and/or vinyl chloride resin in the ink layer and the diisocyanate adduct or ethylene-vinyl acetate copolymer in the lubricant/release layer. Sugita describes, in Example 1, the preparation of a "heat-resistant lubricant layer" that includes acrylic-modified silicone resin and diisocyanate adduct, and the preparation of a "release layer" that includes ester wax and ethylene-vinyl acetate copolymer. Nothing in Sugita teaches or suggests a process for preparing a recording medium including a release layer containing a combination of wax and resin as in claim 13.

Kitamura and Daems both fail to remedy the deficiencies of Sugita. Kitamura describes a thermal transfer recording medium having a multi-layered "release layer" that includes a heat-meltable peeling layer, an intermediate layer of ethylene-vinyl acetate, and a heat-meltable adhesion layer. Nowhere does Kitamura teach or suggest a process for preparing a recording medium that includes forming a release layer/solvent-resistant layer containing polyester resin and polyethylene wax on a substrate in the form of a film and

drying it, as recited in claim 13. Daems also fails to remedy the deficiencies of Sugita.

Daems describes electrophotographic printing methods that employ methyl ethyl ketone as a solvent. Daems does not teach or suggest a process for forming a transfer medium including a solvent-resistant/release layer containing the claimed combination of polyester resin and polyethylene wax. Thus, both Kitamura and Daems, alone or in combination with Sugita, fail to teach or suggest the preparation of the thermal transfer recording medium of claim 13.

Moreover, Applicants have demonstrated that the claimed process achieves unexpected, superior results relative to the combined teachings of Sugita, Kitamura and Daems. Applicants showed, in the Examples disclosed at pages 10-14 of the specification, that a thermal transfer recording medium prepared as claimed, provided superior properties in comparison with media taught by the cited references. As summarized in Table 1, at page 15, Examples 1-8 utilized a combination of polyester resin and polyethylene wax and Comparative Examples 1-4 used polyester resin alone. The amount of combined polyester resin and polyethylene wax in Examples 1-8 and the amount of polyester resin in Comparative Examples 1-4 were equivalent. Examples 1-8, which utilized the claimed resin/wax combination, yielded recording media with superior coating properties, solvent resistance, printing quality and sensitivity, in comparison with Comparative Examples 1-4 which used polyester resin alone. Under the disclosed test conditions, recording media that included only a polyester resin in the release layer/solvent resistant layer was totally unsuitable for practical use.

Contrary to the position stated in the Office Action, Applicants disclosure demonstrates that polyester resin and polyethylene wax do not produce the same effect as one component or the other alone. Rather, the claimed process employing a combination of polyester resin and polyethylene wax provides enhanced results, as exemplified by the disclosed thermal transfer recording media having good coating properties, excellent solvent

resistance and favorable printing quality (see Table 1). For at least these reasons, the cited references do not teach or suggest the invention of claim 13.

As set forth above, Sugita, in view of Kitamura and Daems, would not have rendered the invention of claim 13 obvious. Claims 14-16 depend from claim 13, and thus also would not have been rendered obvious. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

In view of the foregoing remarks, Applicants respectfully submit that this application is in condition for allowance. Favorable consideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further is desirable in order to place this application in better condition for allowance, the Examiner is requested to contact Applicants' representative at the telephone number listed below.

Respectfully submitted,



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